INCH-POUND

MIL-E-1/190J
21 February 2003
SUPERSEDING
MIL-E-1/190H
15 November 1978

MILITARY SPECIFICATION SHEET

ELECTRON TUBE, RECEIVING
TYPE 6112

This specification sheet is inactive for new design after 7 March 1997.

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the electron tube described herein shall consist of this document and MIL-PRF-1.

DESCRIPTION: Twin triode, subminiature, high Mu.

Outline	---	3-1 (EIA)
Base	---	E8-10
Envelope	---	T3
Cathode	---	Coated unipotential

Base connections:

Pin No.	---	1	2	3	4	5	6	7	8
Element	---	2a	2g	h	2k	1k	h	1g	1a

ABSOLUTE RATINGS:

Parameter:	Ef	Eb	Ec	Ehk	Rk/k	Rg/g	Ib/a	Pp/a	TE	Alt
Unit:	V	V dc	V dc	v	Ohms	Meg	mAdc	W	°C	ft
Maximum:	6.6	165	0, -55	200	---	1.1	3.3	0.30	+220	See Note 1
Minimum:	6.0	---	---	---	---	---	---	---	---	---
Test Conditions:	6.3	100	0	0	1,500	---	---	---	---	---

GENERAL:

First Article Test is required and shall consist of all tests in table I with a sample size of 2 for a lot size less than or equal to 150 units and a sample size of 4 for a lot size greater than or equal to 151 units. All samples shall pass Conformance Inspection part 1 of table I before continuing. Half of the samples shall then be subjected to Conformance Inspection part 2, and the remaining samples shall be subjected to part 3, with no test failures permitted during any testing.

After First Article approval, Acceptance testing shall consist of Conformance Inspection part 1 of table I with sample size per table III, category XVI of MIL-PRF-1.

TABLE I. Testing and inspection.

MIL-STD-1311 Test method	Requirement or test	Conditions	Symbol	Limits		Units
				Min	Max	
	Conformance inspection, part 1					
1256	Electrode current (1) (anode)	See note 2 and 3	Ib	0.5	1.10	mA dc
1256	Electrode current (2) (anode)	Ec = -2.8 V dc; Rk = 0 (see note 2)	Ib	---	50	µA dc
1266	Total grid current	Eb = 150 V dc; Ec = 0; Rk/k = 820 ohms; Rg/g = 1.0 Meg (see notes 2 and 3)	Ic	0	-0.3	µA dc
1301	Heater current		If	280	320	mA
1306	Transconductance (1)	See note 2	Sm	1,500	2,100	µmhos
1336	Heater-cathode leakage	See note 2	Ihk	---	5.0	µA dc
1201	Short and discontinuity detection		---	---	---	---
	Conformance inspection, part 2					
1211	Insulation of electrodes	See note 2	---	50	---	---
1031	Low-frequency vibration	Rp = 10,000 ohms; E = 40 Hz; 15 G (see note 2)	Ep	---	25	mV ac
1246	Audio frequency noise	Esig = 45 mV ac; Rg = 0.5 Meg; Rp = 0.2 Meg; Rk = 750 ohms; (see note 4)	EB	---	17	vu
1266	Grid currents	Ef = 7.5 V; Ec = -4.0 V dc; Eb = 150 V dc; Rk = 0; Rg/g = 1.0 Meg (see notes 2 and 5)	Ic	0	-0.5	µA dc
1306	Transconductance (2)	Ef = 5.7 V (see note 2)	ΔSm Ef	--- ---	15	%
1316	Amplification factor	See note 2	Mu	60	80	---
1321	AC amplification	Ebb = 100 V dc; Ecc = 0; Esig = 0.2 V ac; Rk = 0 (see note 2)	Ep	8.0	---	V ac

TABLE I. Testing and inspection - Continued.

MIL-STD-1311 Test method	Requirement or test	Conditions	Symbol	Limits		Units
				Min	Max	
	Conformance inspection, part 2 - Continued					
1331	Direct-interelectrode capacitance	No shield (see note 2) No shield (see note 2) No shield; section 1 No shield; section 2 No shield; No shield	Cgp Cin Cout Cout Cgg Cpp	0.8 1.30 0.16 0.21 --- ---	1.20 2.10 0.30 0.35 0.014 0.80	pF pF pF pF pF pF
1116	Lead fatigue		---	---	---	---
2126	Envelope strain		---	---	---	---
1041	Shock	450 G; EhK = +100 V dc; Rg = 0.1 Meg (see note 6)	---	---	---	---
1031	Vibration fatigue	2.5 G; fixed frequency; F = 25 min, 60 max	---	---	---	---
---	Post-shock and vibration-fatigue test end points:					
1031	Low-frequency vibration		Ep	---	100	mV ac
1336	Heater-cathode leakage		Ihk	---	20	µA dc
1306	Change in transconductance (1) of individual tubes		ΔSmt	---	20	%
1105	Permanence of marking					
	Conformance inspection, part 3					
1506	Heater-cycling life	Ef = 7.0 V; 1 min "on", 4 min "off"; Ehk = 140 V ac; Ec = Eb = 0	---	---	---	---
1516	Stability life	Eb = 150 V dc; Ehk = +200 V dc; Rg/g = 1.0 Meg; Rk/k = 820 ohms; TA = room (see note 2)	---	---	---	---
---	Stability life-test end point:					
1306	Change in transconductance (1) of individual tubes		ΔSmt	---	10	%
1501	Intermittent life (room temperature)	Stability life test, or equivlent conditions; TA = room	---	---	---	---
---	Intermittent life-test end point (room temperature) (500 hours):					
1211	Insulation of electrodes		R	50	---	Meg

TABLE I. Testing and inspection - Continued.

MIL-STD-1311 Test method	Requirement or test	Conditions	Symbol	Limits		Units
				Min	Max	
	Conformance inspection, part 3 - Continued					
---	Intermittent life-test end point (room temperature (1,000 hours):					
1211	Insulation of electrodes		R	25	---	Meg
1501	Intermittent life (high temperature)	Stability life-test conditions; TE = +220°C (min) (see notes 2 and 7)	---	---	---	---
---	Intermittent life-test end points (500 hours) (high temperature):					
1266	Total grid current		Ic	0	-0.9	µA dc
1301	Heater current		If	276	328	mA
1306	Change in transconductance (1) of individual tubes		ΔSmt	---	20	%
1306	Transconductance (2)		ΔSmEf	---	15	%
1336	Heater-cathode leakage		Ihk	---	10	µA dc
1211	Insulation of electrodes		R	50	---	Meg
1306	Transconductance (1) average change		Avg ΔSmt	---	15	%
---	Intermittent life-test end points (1,000 hours) (high temperature):					
1266	Total grid current		Ic	0	-0.9	µA dc
1301	Heater current		If	276	328	mA
1306	Change in transconductance (1) of individual tubes		ΔSmt	---	25	%
1306	Transconductance (2)		ΔSmEf	---	20	%
1336	Heater-cathode leakage		Ihk	---	10	µA dc
1211	Insulation of electrodes		R	25	---	Meg

NOTES:

1. See “Reduced pressure (altitude) rating”, and altitude, maximum peak voltage in the basic document.
2. Test each unit separately.
3. This test to be performed at the conclusion of the holding period.
4. Tie 1k to 2k; 1g to 2g; and 1a to 2a.

NOTES: - Continued.

5. Prior to this test, tubes shall be preheated a minimum of 5 minutes with all sections operating at the conditions specified below. The 3-minute test is not permitted. Test at specified conditions within 3 seconds after preheating. Grid emission shall be the last test performed on the sample selected for the grid-emission test.

Ef	Ec1	Eb	Rk	Rg
V	V dc	V dc	Ohms	Meg
7.5	0	150	820	1.0

6. A grid resistor of 0.1 megohm shall be added; however, this resistor shall not be used when a thyratron type short indicator is used.

7. Envelope temperature (TE) requirements, when measured in accordance with the temperature by conduction-band measurement (method 1226), will be satisfied if a tube having bogey Ib (±5 percent) under normal test conditions, is determined to operate at or above minimum specified temperature at any position in the life-test rack.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Review activities:
Army - AR, MI
Navy - AS, CG, MC, OS
Air Force - 99

Preparing activity:
DLA - CC

(Project 5960-3611)